DOCUMENT RESUME

ED 193 338 TM 800 657

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TITLE Assessing Entry Levels of Students: Affective and Cognitive.
PUB DATE Apr 80
NOTE 27p.; Paper presented at the Annual Meeting of the American Educational Research Association (64th, Boston, MA, April 7-11, 1980).

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Academic Achievement; Affective Measures; *Course Evaluation; Course Objectives; Curriculum Development; Data Collection; *Evaluation Methods; *Expectation; Higher Education; *Item Sampling; Pretests Posttests; Rating Scales; Student Attitudes; Teacher Attitudes
IDENTIFIERS Student Evaluation of Achievement

ABSTRACT

Two different methods for collecting course-specific data on class learning and growth are discussed. The first, Item/Student Sampling, is directly dependent upon assessing class performance both prior to and following instruction. This procedure relies on multiple matrix sampling techniques. The second method, referred to as Self-Report of Course Outcomes, is based upon a combination of student and instructor course expectations regarding learning, perceptions of the degree to which major needs and expectations were met, and attitude changes as a result of instruction. Both approaches focus primarily on group or class learning. Once these global concerns have been addressed, attention can be focused on selective refinement of course segments that are in the greatest need of improvement. The following exhibits are appended: (1) rating scale for use in determining whether or not to include specific items in pre-instruction matrix sampling minitests; (2) minitest format; (3) student expectation questionnaire; and (4) student outcome form. (Author/RL)

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ASSESSING ENTRY LEVELS OF STUDENTS:

AFFECTIVE AND COGNITIVE

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American Educational Research Association
Boston, Massachusetts
April, 1980

TM 800657

SUMMARY

This paper deals with the critical link between instruction assessment and course refinement or adjustment. It focuses on a problem encountered by many instructors as they attempt to evaluate their own courses for instructional improvement purposes. The question is, how can instructors gather course-specific evaluative data that will be of genuine use for instructional refinement purposes? It presents two distinctly different methods for collecting course-specific data on class learning and growth. The first, Item/Student Sampling is directly dependent upon assessing class performance both prior to and following instruction. The procedure relies on multiple matrix sampling techniques such as those described by Sirotnik (1974) and Morris and Fitz-Gibbon (1978). The second method, referred to as Self-Report of Course Outcomes, is based upon a combination of student and instructor course expectations regarding learning, perceptions of the degree to which major needs and expectations were met, and attitude changes as a result of instruction. Though each approach uses a different type of data, they both are intended to focus primarily on group or class learning, as opposed to that of individual students. This emphasis is based largely upon the assumption that in most classroom situations, the potential for instructional improvement is greatest when the group is the basic unit of analysis.

This paper deals with the critical link between instructional assessment and course refinement or adjustment. It focuses on a problem encountered by many instructors as they attempt to evaluate their own courses for instructional improvement purposes. The question is, how can instructors gather course-specific evaluative data that will be of genuine use for instructional refinement purposes? What practical approaches might be capable of bridging the gap between outcome data generation and effective utilization? In addressing the question we must be realistic about the amount of time and energy that faculty have available for instructional assessment and refinement purposes. Demands on both of those resources are too numerous and too well known to warrant review here.

The paper presents two techniques designed to provide teaching faculty with the ability to gather course-specific data on achievement (objective data) and on affective development and achievement (self-report data) prior to and following instruction. Both approaches have been extensively tested in virtually every type of course and academic area. All developmental work was based on the major assumption that instructional assessment data, if it is to be truly useful for instructional improvement purposes, must be credible to those who are to use it. If the information is not credible, if it doesn't make sense, or if its relationship to meaningful outcomes of instruction is not clear, then it simply will not be used. Secondarily, but also of high importance, it was necessary that both approaches be practical in terms of time and energy required to obtain the information and that they yield data that it would be realistic to assume instructors could apply to instructional refinement concerns.

BACKGROUND

There are many strategies that can be used to organize the content of a curriculum. Major focus can be on sequencing of content according to some overall internal framework, on the process implied by the various roles that use the content in practice, on specific problem solving techniques within some larger system(s) of interest, or on whatever instructional methodologies might be preferred. The strategies tend to produce differential results because they have different strengths and weaknesses, and because of the varying nature and demands of the content that needs to be learned.

The particular strategy used for structuring the content will have a strong influence on both faculty attitudes toward the curriculum and on resultant student performance. To be sure, major changes in program focus or objectives will present considerable challenges to instructors and developers. When the focus within a program changes from the traditional content/concept organization with which all faculty are familiar, to some new system for arranging relationships (e.g., crisis intervention or problem solving) particular difficulties and stresses will become evident. The new content organization may pose monumental problems for faculty with particularly narrow subject matter specialties or for generalists, whichever the case may be. Without deliberate and careful attention of developers, evaluators and instructors alike, situations may be created wherein faculty will be expected to assume roles they may not be prepared to assume. This underscores the need for thoughtful evaluative planning prior to program development and/or revision.

Regardless of which curriculum development strategy, or combination thereof, may have been initially used, the eventual success of the program

or course of study will depend heavily upon the degree of commitment to meaningful post-implementation evaluation and on how the strategies are employed when making the revisions. As Bloom (1977) has stated, "The most critical evidence on a new curriculum is the extent to which it leads to appropriate kinds of learning by the students" (p. 98). Segments needing minor refinement or substantial revision will be identifiable by examining data reflecting changes in students: data of the type for which procedures are described in this paper. Once this has been accomplished, direction regarding exactly what needs changing in the identified "trouble spots" may then be sought from other information sources (viz., content specialists, practitioners, researchers, consumers, etc.).

One problem inherent in many curriculum development efforts, and definitely worthy of mention in this context, stems from the fact that following curricular changes many developers are simply not able to say, in any definitive sense, whether the changes actually represent an improvement over the original curriculum. Is the new program, course or unit more effective than the old? Are the intended effects of instruction more likely to be attained by students in the new program? What about the unintended instructional effects: both positive and negative? Lack of adequate baseline data prior to curriculum changes is a leading cause of the inability to address these questions. The fact is that changes in curricular organization, structure, content and/or timing do not always result in the desired instructional improvements. Sometimes the results are in quite the opposite direction and it is the responsibility of the developers to recognize when this is the case and to be prepared to take appropriate corrective action. Some evaluative outcome-oriented baseline capability is an absolute necessity for

effective curriculum development.

The following section focuses on concerns that relate to the development of adequate baseline data as well as to post-implementation evaluation and development concerns.

CURRICULUM EVALUATION/REFINEMENT QUESTIONS

Procedures for assessing achievement and other course-related change and for making formative decisions about instructional quality should be based on an integration of information about the affective and cognitive entry levels of students with commonly encountered instructional development and evaluation concerns. There are four basic curriculum evaluation questions that need answering prior to purposeful curriculum adjustment. They are:

1. What are the basic (most critical) objectives of the course and how well do students meet them prior to instruction?

2. What is the nature of students' attitudes toward the subject matter of the course? For example: What do they expect to learn as a result of taking the course? How do they expect to be different as a result of taking the course? Are they optimistic about the usefulness of the course to their future studies and/or profession?

3. How well do students meet the basic objectives of the course following instruction? In other words, were the instructor's objectives for the course met at some acceptable level?

4. To what extent did students attitudes toward the subject matter of the course improve or change as a result of instruction? In other words, were the preinstruction expectations of the students' met to an acceptable level? Was the course worthwhile from their standpoint?

In an ongoing instructional program the circumstances which require that such questions be addressed should arise with predictable regularity. Not only do programs typically have evolutionary developmental stages, but changes continue to occur in content, concepts, political and economic

climates, as well as in the overall objectives of the program long after initial implementation. Curriculum developers must have access to sound evaluative data that will enable them to determine where revisions or new materials are needed and when the changes should be made. These needs are the major focal points of questions 1 and 3. It is also important to monitor the nature of as well as changes in students' perceptions regarding their learning needs (Postlethwaite, 1977; Scott, 1979). With this type of information developers can determine the extent to which the curriculum is meeting the learning needs of students. Is it the appropriate level of material? Is it relevant to their major interest areas? Is there sufficient or excessive redundancy? These needs and expectations are the focal points of questions 2 and 4.

The methodologies described in the remainder of this paper are designed to provide instructors with the means for obtaining course-specific information on questions such as these. Once these global concerns have been addressed attention can then be focused on selective refinement of course segments that are in the greatest need of improvement.

THE APPROACHES

The following sections present two distinctly different methods for collecting course-specific data on class learning and growth. The first, Item/Student Sampling is directly dependent upon assessing class performance both prior to and following instruction. The procedure relies on multiple matrix sampling techniques such as those described by Cirotnik (1974) and Morris and Fitz-Gibbon (1978). The second method, referred to as Self-Report of Course Outcomes, is based upon a combination of student and instructor course expectations regarding learning, perceptions of the degree to which major needs and expectations were met, and attitude changes as a result of instruction. Though each approach uses a different type of data, they both are intended to focus primarily on group or class learning, as opposed to that of individual students. This emphasis is based largely upon the assumption that in most classroom situations the potential for instructional improvement is greatest when the group is the basic unit of analysis.

These are certainly not the only two approaches for collecting data about class learning and growth, nor are they necessarily the best. Certainly there are others. However, the extensive field testing that has gone on over the past three years indicates that both approaches are low cost and, in many respects, high return. They are practical and they do yield results that are credible to instructors. It is realistic to expect that almost any faculty member could use them to make detailed examinations of the effects of instructional offerings on class learning.

Item/Student Sampling

The information potential of in-class test results for curriculum

revision or adjustment, assuming that they have been properly constructed, is large. They are probably the best source of information about course-related student learning and growth available to instructors without excessive additional expense. However, for a variety of reasons, much of the potential of classroom testing is usually not realized. One of the major reasons is that efforts to obtain comprehensive information about student learning in courses through the use of objective testing are usually limited by the premise that each student should always be given the same items as every other student. Furthermore, when test data are available they are typically used only for evaluating individual students and for assigning grades. If only these test results for groups were routinely analyzed one step further, on either an item-by-item basis or by subgroups of content-specific items, then instructors could make much better use of the results for evaluating the effects of their instruction on students. Item/student sampling (ISS) is designed to assist instructors as they attempt to secure this additional information from their existing in-class testing programs.

Item/student sampling is a technique that is useful for obtaining preinstruction data on class performance, without consuming inordinate amounts of participant time. By devoting a small amount of in-class testing time to the task of evaluating the course for instructional improvement purposes, rather than using the testing time exclusively for evaluating the performance of individual students, a number of opportunities become available for focusing on questions that might not otherwise be addressable. The approach is actually a simple variation of traditional pre/post classroom testing and it is equally applicable to both norm- and criterion-

referenced approaches. It has been used effectively with all commonly encountered types of test items.

In most subject areas it is rare for students to have no knowledge at all about the subject matter of a course prior to instruction. They will tend to be relatively strong on some parts of the content and weak on others. In some areas they will simply be misinformed. The important point here is that knowledge of where strengths and weaknesses exist in a class, prior to instruction, can often be used to the instructor's advantage for both curriculum development and refinement purposes.

Item/student sampling is used only for collecting preinstruction achievement data. The preinstruction test results are later compared with information from regular in-class test administrations. The process is as follows: before the class meets for the first time, the instructor selects items for which preinstruction data is desired (see Exhibit 1 for a rating scale that can be used to judge the relative merit of items). Once items of interest have been selected, two or more minitests are constructed. Each minitest becomes a pretest, containing a unique subset of the items of interest. Each minitest is administered to a randomly selected group of students prior to instruction, usually during the first class session.

Minitests can contain items that cover the whole course or coverage can be limited to specific subject matter areas. As a general rule content subscales should contain 10 or more items and the items should be equally distributed across the minitest forms. This will help maintain the reliability of the subscale scores. Minitests should contain items of approximately equal difficulty that cover the same general content areas (i.e., the minitest forms should be balanced as much as possible with respect to

both content coverage and item difficulty). Given that at least 10 randomly selected students are available to respond to each of the minitest forms, reasonably reliable estimates of the performance levels and abilities of the class prior to instruction can be obtained. Since group growth or change between the pretest and posttest is usually the main concern, these estimates are then compared with results from class test performance on the same or similar items collected during the regular in-class testing, yielding item and/or content subscale gain scores for groups. Exhibit 2 presents the general minitest format.

The advantages of using the ISS technique for collecting preinstruction data are numerous. First, no student need be exposed to many of the items which would be encountered later during the regular testing program. Second, a minimum of student and instructor time is required. Third, costs associated with materials preparation, data processing, and analysis are minimal.

Item/Student Sampling Procedures. The following is a description of the steps an instructor would use to gather preinstruction data using item/student sampling.

> Step 1: Select items to be included on the minitests by rating those available for each major course objective. Use a scale similar to that presented in Exhibit 1. Write additional minitest items to complete coverage of any objectives or to bring to 10 the number of items on any content area subscales.
>
> Step 2: Construct two or more minitests (see Exhibit 2) using items rated as centrally important to the main objectives of the course from Step 1. As a general rule, at least 10 students should be available to complete each minitest. Therefore, the number of students expected to be in the class, divided by 10, would give the maximum number of minitests that could be constructed. Try to match each of the minitest forms with regard to item content, item difficulty, and test length. (If content subscales are desired, 10 items or more per subscale should be used. Distribute the subscale

items across the minitest forms in approximately equal proportions.)

Step 3: Administer each minitest form to a randomly selected group of 10 or more students during the first class session or as soon thereafter as possible. Allow plenty of time for the students to complete the test as this should not be a speeded exercise. The easiest method for insuring random administrations is to mix the various forms before they are distributed to the class.

Step 4: Score the minitest results and compute the percent of correct responses for each item. If included, compute content area subscale scores by summing the percent correct for each of the items in the subscale and divide by the number of items on the subscale. Develop a table showing preinstruction data similar to Table 1.

Step 5: Collect postinstruction data using regular testing procedures (quizzes, midterms, and/or final examination). If tests or quizzes are to be returned to and kept by students, be sure to record post-test item data (percent correct) prior to giving students their results.

Step 6: Develop a table combining minitest (preinstruction) results with postinstruction results (see Table 2). Compute item percentage gain scores and, if applicable, content subscale gain scores. The latter would be computed for each content subscale by summing all of the scale's item gain scores and dividing by the number of items in the subscale.

Step 7: Study the results and attempt to identify their instructional implications.

Item/Student Sampling: Examples

Tables 1 through 3 are from a sample class report of an item/student sampling project in a philosophy of nursing course. Pre/post data are reported for each of four content area subscales. The four minitests were constructed by randomly assigning 60 midterm and final examination items to forms A through D. Each form contained 15 items. The items that were included had been identified by the instructor as being centrally important to one of the four content areas of interest using the rating scale contained in Exhibit 1. The forms were matched as much as possible for both item difficulty and content. Each of the 60 items was attempted by approximately

one quarter of the students. As these were 5-option multiple-choice items, students would have correctly answered approximately 20% of the items by chance alone. The reported percents correct must be interpreted in light of this chance score. Table 1 presents preinstruction scores for 45 students.

Table 2 presents comparisons of the estimates of preinstruction class proficiency with class performance on the posttest (either midterm or final) examinations for one of the four areas. Table 3 is a class summary of the item/student sampling project across the four content subscales.

Given the relatively high level of student performance on these items prior to instruction, the gain is probably well within a reasonable range of expected improvement as a result of instruction. However, this determination should only be made by the instructor(s) responsible for the course. Each has, by virtue of the knowledge about the specific class, the content covered, the approaches used, the attributes of the students, and of other possibly intervening circumstances, a perspective about the course that makes them uniquely qualified to interpret and apply this type of course-specific data to instructional decisions.

Table 4 presents comparisons of pre/post gain score summaries for a basic chemistry course. Pretest and posttest data were gathered once during the Fall of 1977 and again during the Fall of 1978. In spite of the fact that there were different students involved in each of the classes, the ISS procedures indicated that preinstruction performance levels were essentially the same during both years. Thirty percent of the items were answered correctly prior to instruction. Test performance following instruction was equally comparable. The main point of interest here is the fact that the correlation between the 1977 and 1978 pretest results was .91.

Table 1

Pretest (Minitest) Scores from Item/Student Sampling:

Philosophy of Nursing

Item number	Content area subscale	% Correct on pretest (minitest) Form A (N=11)	Form B (N=11)	Form C (N=11)	Form D (N=12)
1.		27%	9%	18%	25%
2.	Scale 1: Pharmacological background (χ= 21; sd=8.4)	18%	9%	27%	25%
3.		9%	18%	36%	33%
4.		27%	18%	18%	75%
5.		73%	82%	73%	92%
6.	Scale 2: Nutrition and health (χ=71; sd=13.6)	55%	73%	91%	50%
7.		64%	45%	73%	75%
8.		64%	82%	36%	25%
9.		18%	27%	27%	25%
10.	Scale 3: Epidemiological background (χ= 25; sd=7.4)	36%	18%	9%	33%
11.		18%	18%	27%	25%
12.		27%	36%	45%	25%
13.		64%	27%	45%	42%
14.	Scale 4: Public health issues (χ=36; sd=10.2)	27%	36%	27%	33%
15.		36%	36%	27%	33%
Average correct on form		38%	36%	39%	41%

*Framed scores indicate grouping of items across forms for specific content areas. Each of 45 students complete one of four 15-item pretests (minitests) on the 1st day of class. Each pretest contained objective items from the course midterm and final examinations. Forms were of approximately equal difficulty and were matched as much as possible with regard to content coverage.

Table 2

Pretest/Posttest Changes Following Instruction

by Content Areas: Philosophy of Nursing*

	Percent correct on pretest (N = 11 or 12)	Percent correct on posttest (N = 41)	Change (+ or -) in percent correct
Scale 1: Pharmacological background:			
Item 1A	27%	78%	+51
Item 2A	18%	88%	+70
Item 3A	9%	76%	+67
Item 4A	27%	95%	+68
Item 1B	9%	66%	+57
Item 2B	9%	88%	+79
Item 3B	18%	90%	+72
Item 4B	18%	63%	+45
Item 1C	18%	80%	+62
Item 2C	27%	71%	+44
Item 3C	36%	76%	+40
Item 4C	18%	78%	+60
Item 1D	25%	93%	+68
Item 2D	25%	73%	+48
Item 3D	33%	85%	+52
Scale average	21% (sd = 8.4)	80% (sd = 9.6)	59%

*In the class report this table reported results for the four content area subscales from Table 1.

Table 3

Pre/Post Instruction Summary by Content Area:

Philosophy of Nursing

Scale number and content area	% Correct on pretest	% Correct on posttest	Change (+ or -) in percent correct
Scale 1: Pharmacology	21% (sd = 8.4)	80% (sd = 9.6)	+59%
Scale 2: Nutrition & health	71% (sd = 13.6)	87% (sd = 7.1)	+16%
Scale 3: Epidemiology	25% (sd = 7.4)	70% (sd = 7.9)	+45%
Scale 4: Public health	36% (sd = 10.2)	78% (sd = 7.5)	+42%
Column χ's	38%	79%	+41%

Table 4

Pre/Post Gain Score Summary Comparisons

Fall 1977 and Fall 1978: Chemistry 104

	Percent correct		Class gain
	Prior to instruction*	Following instruction (posttest n's in parentheses)	Change (+ or -)
Fall 1977			
Form A, item 8	26%	92% (122)	+66%
" , item 9	51%	97% (122)	+46%
" , item 10	23%	79% (122)	+56%
" , item 12	34%	81% (118)	+47%
" , item 13	49%	94% (118)	+45%
Form B, item 1	11%	72% (122)	+61%
" , item 2	32%	81% (122)	+49%
" , item 3	57%	95% (122)	+38%
" , item 4	21%	78% (122)	+57%
" , item 5	26%	88% (118)	+62%
" , item 6	23%	89% (122)	+66%
" , item 7	30%	72% (118)	+42%
" , item 8	23%	81% (118)	+58%
" , item 9	17%	57% (122)	+40%
" , item 10	34%	87% (122)	+53%
Average correct	30%	83%	+52%
Fall 1978			
Form A, item 8	24%	75% (114)	+51%
" , item 9	41%	81% (114)	+40%
" , item 10	24%	74% (114)	+50%
" , item 12	32%	86% (119)	+54%
" , item 13	54%	90% (119)	+36%
Form B, item 1	18%	77% (114)	+59%
" , item 2	22%	86% (114)	+64%
" , item 3	57%	77% (114)	+20%
" , item 4	27%	92% (114)	+65%
" , item 5	30%	93% (119)	+63%
" , item 6	17%	83% (114)	+66%
" , item 7	23%	85% (119)	+62%
" , item 8	25%	90% (119)	+65%
" , item 9	27%	81% (114)	+54%
" , item 10	22%	90% (114)	+68%
Average Correct	30%	84%	+54%

*Correlation between 1977 and 1978 pretest results .91.

This indicates that it is probably not necessary to repeat ISS procedures every time a course is taught. In fact, unless there is some reason to suspect that preinstruction capabilities of students might have changed dramatically, it would not be necessary to repeat the procedure for specific subscales more often than once every three of four years.

Student Expectation and Course Outcome Assessment

This section presents a series of approaches designed as a means for instructors to obtain data on initial instructional development, evaluation, and refinement concerns.

Questions, addressed to students both prior to and following instruction, are asked in carefully structured situations in manners as simple and straightforward as possible. It is absolutely crucial that every effort be made to ensure that students fully understand that any information they provide regarding what the course did, or did not do for them as individuals, will in no way influence their grades, but will be used only for instructional improvement purposes. They must understand that the instructor is attempting to obtain their frank opinions, which will be used for evaluating and perhaps modifying the course so as to increase its instructional effectiveness.

The process is basically a two-step approach. The first step involves collecting data on students' preinstruction learning expectations for the course. Students are requested to voluntarily provide this information prior to the time they receive any information about specific course objectives. The second step is to collect information from students about course outcomes after instruction has occurred. As a validity check these self-reports about course outcomes are then compared to test results and

to instructor objectives and student expectations.

It is not absolutely necessary to collect student expectation responses prior to constructing the course-specific form for assessing instructional outcomes for use at the end of the course. It is certainly possible for a faculty member to construct such a form using only the existing course objectives. However, our experience has been that the forms will be more comprehensive if both instructor objectives and student expectations are used in the development of the form. The reason for this increased comprehensiveness is that student responses tend to cover a wider variety of course impacts than instructors typically generate on their own. Therefore, even though preinstruction student expectation responses are certainly not required for the development of outcome assessment forms, they do seem to increase the variety of items that tend to be included beyond that which would probably have been included had the student responses not been used.

Student Expectation Questionnaire. The Student Expectation Questionnaire (SEQ), presented in Exhibit 3, is simply a means for students to communicate their expectations about a course to the instructor. These expectations might include: (a) what they hope to gain by including the course in their studies; (b) how they expect to be different as a result of taking the course; (c) the type of course activities they would like to have included; (d) their reasons for enrolling; and, most importantly, (e) what they expect to learn as a result of taking the course.

The main purpose of having students complete the SEQ is to provide the instructor with detailed information for use in the later development

of a course-specific student outcome assessment form. The expectation responses have also been useful for other purposes. For example, the appropriateness of the expectations can be discussed with the class. In the process, it may be possible to develop a more comprehensive set of course objectives. Such a discussion also allows the instructor to state publically that certain student expectations cannot be met, thus giving appropriate warning to some students that they may be in the wrong course.

Early in the SEQ development process we found that student responses tended to be much more concise when a firm limit was placed on the response length. Students generally exhibit little difficulty describing the major expectations that they have for a course while staying within the recommended 100 word limit. This is not to say that all students will have a clear conception of what they expect from any given course. However, it is usually not difficult to differentiate between students who have clear expectations for a course and those who do not. Evaluations of SEQ responses from specific classes by participating instructors indicate that the overall quality of the responses is usually high enough to ensure that the data will have some instructional improvement application. In any case, SEQ responses almost always provide instructors with some new insights into the nature of student expectations.

Student Outcome Form. The Student Outcome Form (SOF) is simply a means for students to communicate their individual perceptions regarding personal achievements or changes they may have noticed as a result of taking a course. Exhibit 4 presents a sample Student Outcome Form.

Typically, course-specific Student Outcome Forms are developed by instructors after they have collected student expectation (SEQ) data from

the class. There are advantages to using the SEQ procedure in tandom with the SOF self-report procedure. The SEQ/SOF technique seems to be sensitive to the outcomes expressed in both instructor objectives and in students' expectations. It provides course-specific data that is useful for instructional development activities. Cost, in terms of class and instructor time, is usually minimal. Students are provided with a means to directly participate in the instructional assessment/improvement process. In addition, the procedure is often useful for getting information about those types of course outcomes that tend to be difficult, if not impossible, to measure using traditional course evaluation techniques.

The response scale used on an SOF appears to be of little consequence so long as it conforms to sound scaling principles. The example presented in Exhibit 3 happens to use a scale that makes provision for students to report whether their initial preinstruction understandings and/or abilities were high or whether they had had little or no knowledge of the area prior to instruction. While this capability is helpful for interpreting grouped responses and for examining instructional impacts, it is certainly not a requirement. Except for this feature, almost any response scale will suffice.

SEQ/SOF Procedures. The following is a description of the steps an instructor would use to gather course-specific outcome data:

> Step 1: Construct a Student Expectation Questionnaire (SEQ) similar to Exhibit 3. Remember, a typed, course-specific form elicits higher quality responses from students than does a similar question stated either verbally or in writing on a chalkboard.
>
> Step 2: Administer the form to students on the first day of class prior to any verbal discussion of the purposes, content, or organization of the course. Allow 10 minutes for the students to write their expectations.

Step 3: (This step is optional. However, it greatly simplifies the task of separating specific expectations from extraneous material within the response). Underline those parts of each response that are specific course expectations. Type verbatim the individual expectations.

Step 4: Write the major course objectives or expectations that you have for the course using the students' expectations as prompts for perhaps producing a wider range of possible course expectations or objectives.

Step 5: Develop a Student Outcome Form (Exhibit 4) using the information generated in Steps 3 and 4.

Step 6: Administer the SOF at the end of the course, preferably not during the final examination period. Usually 10 minutes will be sufficient. Impress upon the students, verbally, the reasons why the questions are being asked, that the focus of the evaluation is the course and whether or not it was effective, and that their responses are completely anonymous and will not influence their grades in any way.

Step 7: Tally the responses, compute percentages where appropriate, and record results on a blank Student Outcomes Form.

Step 8: Study the results and attempt to identify their instructional implications.

SUMMARY

The goal for both the item/student sampling and the self-report approaches has been to enable individual instructors to systematically obtain data in which they can have confidence: data that they can use to help determine whether their instructional offerings are meeting the expectations and needs of students, as well as resulting in the desired instructional outcomes as reflected in their own expectations for the course. Every attempt has been made to ensure, and field tests in well over a hundred classes indicate, that both approaches are practical, from the point of view of instructors'. It is realistic to assume that they can be used in most teaching situations for gathering data on class learning.

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EXHIBIT 1

Rating Scale for Use in Determining Whether or Not To
Include Specific Items in Pre-Instruction
Matrix Sampling Minitests

The following questions are designed to provide a basis upon which to decide whether or not to include items from course midterm and/or final examinations in pre-post item sampling projects. The major intention is to determine, for each item, whether it focuses on either what the students should know or what the student should be able to do at the end of the course. You, as the course instructor, are to decide what minimum knowledge and what minimum manipulative skills you consider necessary for a student to acquire by the end of the course.

Use the following three categories to rate the importance of each item being considered for inclusion on the pre-instruction forms. Indicate in the right-hand margin, next to each item, the number of the category in which you believe that item belongs. It would be helpful to obtain ratings from others who are familiar with the content.

1. Students probably don't need to know this material as a part of a minimum requirement for the course. (While items in this category may well be desirable inclusions in the course content, your choice of this response indicates that you question the need for every student to possess this knowledge or skill.)

2. Students probably should have some basic knowledge in the area covered by this item, including such things as relevant vocabulary and recall of fundamental "facts." (This category includes simple recognition and understanding of key terms, descriptive equations, sequences, etc.)

3. Students probably should have a thorough working knowledge of the area covered by this item. This includes the ability to apply basic principles, facts, or skills in solving complex problems. (This response indicates that you feel that recall of "facts" is not enough, and that the student at the end of the course should be able to build on those facts using them to solve new problems.)

EXHIBIT 2

Minitest Format

This pretest contains a sampling of test items. Your performance, along with the performance of your fellow students, will be used to determine how much the class, as a group, learns from the course.

Neither individual nor class performance on this pretest will have any influence on final grades in this course. However, your responses are very important since they will have an impact on any final decisions made about the effectiveness of the instruction. Remember, no one is expected to answer all of the questions correctly. Please take your time and answer each question to the best of your ability.

Circle one response to each question unless otherwise indicated. There is NO PENALTY FOR GUESSING.

1. At constant temperature the pressure of a confined gas

   a. is directly proportional to its volume
   b. cannot be changed
   c. is inversely proportional to its volume
   d. is equal to the absolute temperature
   e. none of the above

2. Of the following, the only acid anhydride is

   a. magnesium oxide
   b. iron oxide
   c. acetic acid
   d. carbon dioxide
   e. none of the above

3. Which of the following is NOT an example of a chemical change?

   a. Making of cheese
   b. Dissolving of sugar in water
   c. Burning of gasoline
   d. Digestion of a hot tamale
   e. All of the above

4. Co is the symbol for cobalt; CO is carbon monoxide and is

   a. an equation
   b. a symbol
   c. a formula
   d. another compound
   e. none of the above

EXHIBIT 3

Student Expectation Questionnaire:
Nutrition

Si 214

Explanation: The purpose of having you fill out this questionnaire is to provide the instructor with detailed information about what you expect from your experiences in Si 214. The main objective is to develop information about course-related student expectations that will enable the instructor to adjust this quarter's class to the greatest degree possible.

Anonymity: No attempt will be made to identify the source of any comments. We will not use the responses to make decisions about individual students. Please do not sign your name to the questionnaire.

Directions: Try to limit your response to 100 words or less. Use the back of this page if necessary.

1. What are the major expectations that you have for this course? Try to address course content, course activities and specific accomplishments that you would like to achieve. (100 word limit if at all possible)

EXHIBIT 4

Student Outcome Form*

Nutrition: Science 214
(N=92 - 2 Sections Combined)

At the beginning of the quarter students in this class were asked to state what they expected to learn in this course. The list below was developed by combining students' expectations about the course with the instructor's objectives. It contains a variety of statements that may or may not describe what this course has done for you.

Before you complete this questionnaire, it is important for you to understand that the usefulness of the results from this form will be dependent upon the degree to which you and your classmates are open and honest in your responses. No attempt will be made to identify the source of any comments: your responses are completely anonymous so do not sign the questionnaire.

Please read each item carefully. Determine which alternative most nearly describes your personal development in this course. Circle one option for each item. Feel free to make any written comments that you believe would help to clarify your answers. Please answer each question by circling the most appropriate response.

1. This course has increased by ability to compare food products available in stores so that I can obtain the highest nutritional value possible.

Yes	My understanding was initially low, no increase	My understanding was initially high, no increase	Not sure
(77%)*	(2%)	(13%)	(7%)

2. This course has provided me with the necessary nutritional foundation to develop a proper diet for my lifestyle.

Yes	My understanding was initially low, no increase	My understanding was initially high, no increase	Not sure
(81%)	(2%)	(7%)	(10%)

3. This course has increased my understanding of why certain nutrients are needed by the body and why other things (including certain preservatives and additives) are harmful to it.

Yes	My understanding was initially low, no increase	My understanding was initially high, no increase	Not sure
(84%)	(3%)	(9%)	(4%)

*Results were added to a blank form following administration.